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Bailed Out With A Little Help From My Friends: Social Similarity And Currency Swaps During The 2008 Crisis

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BAILED OUT WITH A LITTLE HELP FROM MY FRIENDS: SOCIAL SIMILARITY AND CURRENCY SWAPS DURING THE 2008 CRISIS

A Thesis Presented

By

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DEDICATION

To my parents, without whose love and encouragement none of this would be possible.

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ABSTRACT

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SOCIAL SIMILARITY AND CURRENCY SWAPS DURING THE 2008 CRISIS

MAY 2017

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One policy reaction of the Federal Reserve to the 2008 financial crisis was the extension of currency swap lines to foreign central banks; this constituted the global transfer of billions of US dollars of wealth and exhibited the role of the US as a global lender of last resorts. Some have attempted to explain the supply of these lines as a function of risk mitigation for domestic US banks with foreign holdings, but no one has yet investigated its social dynamics. In recognizing that the global demand for emergency liquidity was greater than the Federal Reserve's supply, this paper investigates how the similarity of foreign central banks affected the selection of banks to receive liquidity extensions. I calculate similarity scores to the US Federal Reserve for foreign banks eligible for liquidity extensions during the crisis. These measure the textual similarity of foreign central bankers' speeches to those of the Fed, the institutional design similarity to that of the Fed, and the similarity of foreign central banks' governors' educational and professional backgrounds to those of the 2008 Federal Open Markets Commission members. I find that the similarity of foreign central banks to the US offers a significantly stronger and statistically more robust answer to the question of what drove this decision process, and offer implications for regulatory mechanisms to ameliorate this tendency toward homophily.

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CHAPTER 1

INTRODUCTION

During the outbreak of the 2008 financial crisis, the Federal Reserve became one of the most consequential institutions on the global stage. The central bank served a well-known role as lender of last resort for US banks, shoring up their liquidity with highly contentious lending programs to preclude broader domestic economic collapse. At the same time, a similar but lesser-known program was executed; in a series of currency swap agreements which cumulatively totaled over $500 billion, the Fed provided foreign banks and central banks with liquidity necessary to meet their own dollar debt obligations, acting as a global lender of last resort as well (Broz, 2015). It is difficult to overstate the magnitude of this policy decision; these swaps totaled more than the entire 2008 US defense spending proposal, the largest discretionary spending item in the US federal budget that year (2008 Public Budget Database). Importantly, these swaps were larger than some of the domestic bank loans which ignited mass public movements like Occupy Wall Street, and others (Broz, 2015).

The anticlimactic response to these swap lines is nearly as striking in academic literature as it was on the domestic political stage. Only a handful of studies have taken up the issue of currency swap recipients as a centerpiece of their analyses, and in most cases these have been confined to the explanation of lending recipient anomalies (Aizenman and Pasricha, 2009), rather than the structural patterns of global liquidity distribution. The only author to address this question directly found a relationship between US banking exposure and likelihood of swap receipt, framing the process as the Fed accommodating elite banking interests (Broz, 2015). In this study, I offer an alternative theory rooted in the cognitive foundations of human decision-making under uncertainty. I suggest that social similarity of foreign central bankers to the

members of the Federal Open Market Commission (FOMC), who held the decision-making power over which states were considered for and ultimately received swap lines, was the most consequential factor in this process.

While these swap lines constitute a unique case of clandestine policy made under uncertainty, the theory proposed here is not isolated to monetary or financial phenomena alone. Many institutions of US government are afforded similar autonomy in making highly consequential decisions, ranging from the discretion of enforcement actions given to many US federal agencies, to the appointment of any number of delegated positions within the US government at large. The logic of this model serves to broaden the lens through which we understand the actions of autonomous institutions in government and the processes by which elites make consequential decisions within them. Social similarity as an explanatory model is not isolated to the field of political economy, but serves to offer depth and nuance in explaining the case of foreign swap line recipients during the 2008 crisis.

This study introduces novelty in both data and methods for the investigation of the Fed's choice of swap recipients during the crisis. I introduce a sampling strategy to identify counterfactual recipients using propensity score matching based on explicit decision criteria enunciated in the meeting minutes of the FOMC. I further offer methodological innovation in the empirical measurement of social similarity, including the employment of corpus comparison techniques to measure similarity of central bankers' speeches, the use of global employment networks to measure social distance of central bankers from FOMC members, and factor analysis to identify unique dimensions of institutional similarity across central banks. I find that all three dimensions of similarity are significantly associated with the likelihood of receiving a swap line, and conclude with implications for global economic management during future financial crises.

CHAPTER 2

LITERATURE REVIEW

During the financial crisis of 2008, the Federal Open Market Commission held singular discretion over the distribution of over half a trillion dollars through the vehicle of emergency currency swap arrangements with foreign central banks (Broz, 2015). Despite the readily apparent rationale for its investigation, it has received very little attention in the IPE community. What little scholarship which has broken ground in this field has investigated other idiosyncrasies of this period, such as which emerging market economies were ushered into the community of US swap line partners (Aizenman and Pasricha, 2009), and the conditions that led the US to serve the role of 'global lender of last resort' in the first place (McDowell, 2012). These have provided important insight into the many dyadic relationships which emerged from the deep liquidity demands left by the crisis, as well as their qualitative changes, but fail to focus on one of the most critical dimensions of this phenomenon: the determinants of receiving liquidity from the US when a country needed it.

The only study which takes direct aim at this question highlights the role of domestic financial banks' foreign interests in the determination of swap recipients (Broz, 2015). Using measures of foreign economies' exposure to US finance, Broz effectively demonstrates the role of domestic US banks' future well-being in the FOMC's decision of swap line recipients. This is backed with an analysis of those same banks' contributions to Congressional representatives during their consideration of a bill which would render the Fed's lending activities more transparent. This two-step demonstration constructs a convincing case for the primacy of domestic capital interests in the provision of emergency liquidity, with findings robust to a variety of other theoretically relevant economic indicators (Broz, 2015). The findings paint a

picture of international finance as solely responsive to the giants of its own industry, with regulators bending to the will of capital rather than the other way around. The logic is coldly computational, with sheer interest calculations taking the place of more nuanced decision processes centered around the individuals who make them.

Despite the attractively intuitive logic of the model, we should not believe that this is the only, or even the most significant influence on elite decision-making. This logic relies on a series of strong assumptions about the decision-making processes of FOMC members, not the least of which is the primary criteria for adjudication. Through the inclusion of solely economic indicators, this model leaves no causal room for social parameters of decision-making. This is in apparent conflict with the very decision criteria set forth by the FOMC, which Broz cites, suggesting the choice of swap recipients in part by their pursuit of 'prudent policy' ("Minutes of the Federal Open Market Committee October 28-29", 2008). A replication of Broz' model shows that, while the exposure to US finance variable is robust to other economic indicators, its significance is lost alongside institutional and policy-based measures, such as central bank independence . This is not in conflict with Broz' conclusions, which suggest that the interests of domestic finance were significant but not singular influences on the choice of swap recipients. This does suggest the need for analytical accommodation of a broader variety of potential causal influences, especially those which relate to more social dimensions. Such an approach has the potential not only to identify the competition between economic and social determinants, but also to investigate their interplay in this process.

This logic is consistent with a broad literature on the social dimension of international financial governance. The role of homophily and social clustering processes in the actions of financial elites is well-documented in the field of international political economy. Within the US,

there is evidence to show that social distance from the SEC is significantly associated with the frequency of firms' advocacy over proposed legislation (Young et al, 2017), and some have argued that this dynamic of private-regulatory backscratching constituted the kindling of the 2008 crisis (Baker, 2010; Engelen et al, 2012). Such findings on the influence of social relationships on regulation have been demonstrated elsewhere internationally, as well, including in the UK (Grant, 1993) and in northeast Asia (Selmier, 2013). Clearly, social selection is a consequential feature of the domestic interactions between private and public agents, and holds strong implications for the decisions of financial regulatory elites across the world.

This dynamic between private and regulatory, however, appears to hold within the regulatory world itself. There is ample evidence of 'club-like' behavior between and among regulators themselves, in the absence of such relationships with private bankers (Tsingou, 2014). To a certain degree this should be expected; a vast body of literature on the 'revolving door' in finance has thoroughly established the fuzziness or total absence of boundaries between the classes of private financial elites and their regulatory counterparts, both within the US (Johnson 2009; Johnson and Kwak 2010; Tett 2009) and internationally (Seabrooke and Tsingou, 2009; Young and Pagliari 2015). Still, the prevalence of this dynamic between regulators on a global stage suggests that the institutional contexts in which they work largely fail to mitigate the role of social selection in the decisions of financial regulatory elites.

These findings strongly suggest that an analysis of financial regulatory elites' decisions in isolation of the social dimensions of those decisions is only a partial analysis, at best. Ignoring this dimension can not only warp the models we build to reflect reality, but can even attribute false causality to economic indicators as a result of the collinearity with a social confound. For example, it is quite likely that countries receiving a swap line may have also had strong US bank

presence, both as a result of that country's similarity to the US along regulatory and social dimensions. This paper aims to build an integrated framework of the FOMC's decision process in selecting swap line recipients during the financial crisis of 2008. Building on the existing work by Broz, I build measures of different, theoretically relevant dimensions of social similarity to the Fed to predict the likelihood of a state receiving a swap line during or after the crisis.

CHAPTER 3

THEORY AND HYPOTHESES

A. Theory

This study aims to build a theory of swap recipient selection premised in social similarity. Approaching this question from a different dimension than earlier approaches, I suggest that the cognitive foundations of human decision-making are the primary factors which should be considered in clandestine, high-stakes policy choices. As such, this study situates its claims deeply within psychological literature on the heuristics used by individuals to adjudicate decisions under circumstances of great uncertainty. These micro-foundations are generalized to the macro-level to clarify the logic by which we would expect FOMC members to select on criteria of social similarity.

The theory put forth in this paper is premised in cognitive models of decision-making. The cornerstone of this theory is found in work by Tversky and Kahneman, which documents the various heuristics and mental shortcuts used by individuals to economize on cognitive processing when assessing probabilities of some event under uncertainty (1975). These authors review three key psychological heuristics to handle uncertainty, those of representativeness, availability, and anchoring and adjustment, and document the biases resulting from their use. The representativeness heuristic pertains to answering the probabilistic question, 'How likely is it that object A belongs to class B?,' where the availability bias pertains to assessing likelihoods of some event based on the ease with which that event is imagined by the assessor. Adjustment and anchoring, collectively, handle the Bayesian updating of likelihood estimates within decisions based on the presentation of new information. The theory developed here will deal primarily

with the heuristics of representativeness and availability, for their clear applications to the assessment of risk in issuing swap lines.

These heuristics' interplay is the proposed mechanism by which social similarity influenced currency swap assessments during the crisis. Availability is the first link in this chain, and the natural first question an individual would ask when confronted with a situation demanding mass global liquidity provision; "what would a central bank that most needs and would most effectively use a currency swap look like?" This demands the development of a prototype by the assessor, namely a model foreign central bank against which to compare the various candidates for swaps. In the absence of an internationally agreed-upon 'gold standard' for central banking procedures (and the likely departure of a model prototype from these standards if they existed), it is likely that this comparison would be made against the Federal Reserve's own characteristics. Indeed, social psychology experiments have demonstrated the role and frequency of egocentric availability biases, especially in the context of group assessments and interaction recall (Ross and Sicoly, 1979). Individuals are frequently found to use their own characteristics as relative norms in the absence of comparative criteria (Dunning and Hayes, 1996), as indicators of the prevalence of certain attributes in a population at large (Krueger and Clement, 1994), and even to define positive traits and abilities along dimensions where they excel (Dunning and Cohen, 1992). Broadly, this suggests that individuals making comparisons in cases of uncertainty will often use themselves as models.

The second link in this explanatory chain involves the representativeness bias. In assessing various potential swap recipients, FOMC members would ask "how likely is it that this central bank needs and will effectively use a currency swap?" As a direct corollary of the first cognitive response, FOMC members implicitly ask themselves how distant any given central

bank is from the characteristics of its own institution which it finds relevant for the management of a currency swap. These two heuristics have well-established, and often overlapping sets of biases resulting from their use in estimating likelihoods: insensitivity to existing prior probabilities, over- or under-estimation of likelihoods based on the imaginative range of the assessor, and the illusion of high validity in final choice (Tversky and Kahneman, 1975). These biases all suggest that human decision-making under uncertainty, even that of financial policy elites, has socially-influenced error. In the context of FOMC members assessing the probability of a swap meeting its intended goal, these heuristics suggest a decision based on how closely a foreign central bank resembles a sound institution for financial regulation and stability, or more simply, the Federal Reserve.

This theory serves two interrelated purposes. The first is the establishment of a socially influenced cognitive foundation for decision-making during crisis, which serves to account for error which would go missed by pure cost-benefit models. The second purpose is to demonstrate the confound posed by earlier findings regarding this question. We should not expect the role of social similarity in the assessment of institutional soundness to be limited to central bankers' decisions. Rather, this phenomenon should more broadly explain minimally some variance in a broad variety of international economic interactions, especially those involving risk, like trade and financial investment. In this way, this theory serves to undermine the causal link identified between US bank exposure in foreign countries and the likelihood of their receiving a currency swap, simply by dint of explaining some of the variance in the exposure at all. Earlier explanations of currency swaps as a factor of US investments are correct, but in a limited way; social similarity of foreign banking systems and their administrators serves as an indicator of their trustworthiness in the context of a risky decision. In this logic, US bank exposure abroad is

a simultaneous consequence of the same phenomenon which should affect the likelihood of currency swap, thereby offering statistically significant results as a factor of their shared causal precedents. Below, I formalize this theory in the form of three hypotheses with falsifiable claims about the proposed relationship.

B. Hypotheses

This paper enunciates a theory of social similarity regarding the determinants of currency swap recipients during the 2008 crisis. Testing such a theory requires grounding, substantively, what constitutes social similarity. As discussed at length below, literature in the field of elite communities and global policy coordination suggests that three dimensions of social similarity are especially consequential: speeches, institutional frameworks, and professional backgrounds. As such, the three hypotheses to be tested are listed more explicitly below:

H1: Similarity of foreign central bankers' speeches to those of FOMC members is positively associated with likelihood for currency swap receipt.

H2: Similarity of foreign central banks' institutional framework to that of the Federal Reserve is positively associated with likelihood for currency swap receipt.

H3: Proximity of foreign central bankers to members of the FOMC in a network of global employment is positively associated with likelihood for currency swap receipt.

To test these claims, I employ a multiple logistic regression model predicting a currency swap with matched cases using variables relevant to each dimension of social similarity. This study does not test the role of social similarity in the volume of swap received, especially as this is a function of the mass of the receiving economy. Rather, these explanatory variables are used

to predict the binary receipt of a swap at all, which helps to understand their role in the broader likelihood of choice.

The measures for these types of social similarity are all constructed as a function of existing data on the actions and characteristics of these institutions and their respective administrators. These variables are discussed at length in the section below, regarding their choice, source, measurement units, and interpretation, following the sampling process used to identify potential counterfactuals.

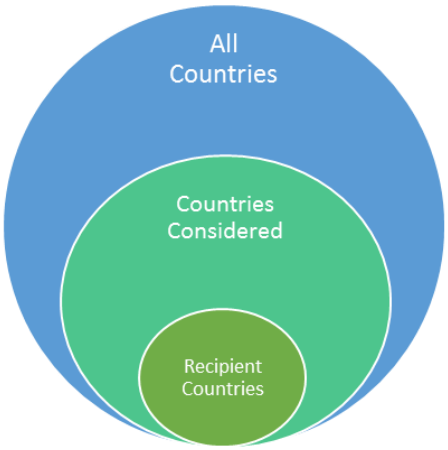
CHAPTER 4

DATA AND CASES

A. Matching Counterfactual Recipient States

Not all countries received a currency swap line during the crisis, nor were all countries necessarily eligible for or in need of one. Indeed, it would serve to overestimate the competitiveness and underestimate the likelihood of swap receipt if its probability were assumed to be evenly distributed across all states in 2007 and 2008. In reality, only a select group of countries was considered for a swap line: those which were deemed by the FOMC to need one. For this reason, in testing a social theory of swap line decision-making, it is essential to establish a population of reasonable counterfactual cases against which to compare the actual swap recipients. A country could be similar to the US in every way, but if its economy was not meaningfully affected by the crisis it would be foolish to include them in this model. I render this logic more visually explicit in figure 1 below. Because representatives of the Federal Reserve informed me that a list of all states under consideration for these swaps is unequivocally unavailable, I use matching to generate a population of counterfactual states against which to compare swap recipients along social dimensions.

Figure 1: Case Selection Logic



The project makes use World Bank macroeconomic data and data from Daniel McDowell's work on bilateral central bank swap line development to match countries on the explicit decision criteria enunciated by the Federal Open Market Commission members, namely the mass of the economy, depth of the crisis domestically, and the availability of alternative liquidity lines ("Minutes of the Federal Open Market Committee", 2008). The proxy variables used to measure these decision criteria for matching are listed below in table 1:

Table 1: Variables for Matching

Decision Criterion	Data Used for Matching
Size of economy	GDP [**World Bank, 2016**]
Depth of crisis	Change in GDP Bank liquidity to reserve ratio Real interest rate [**World Bank, 2016**] Domestic credit to private sector Domestic credit provided by financial sector
Availability of alternative lines	2007/8 network of swap lines [**McDowell, 2016**]

The matching process involved several important decisions in the data preparation. Because missing values needed to be imputed for matching, I chose no variables which were missing more than 50% of their values for all states in 2007. Furthermore, not all actors who

received swap lines were comparable in scale; most were single central banks, but one was the European Central Bank, which has constituent member central banks. This was the only 'umbrella' central bank to receive a line, so I chose to include the state-level data of all constituent members rather than the aggregate data for the Eurozone. Finally, there were 2 states (Brazil and South Korea) which received multiple lines, one of which came from the US in each case. Because all other states which received alternative lines did not receive one from the US, and because these two states received alternate lines from distinct countries (China and Argentina), I decided it was viable to include them in the analysis. These decisions left 30 individual states receiving lines, 16 of which were ECB members and 14 of which received their swap lines independently. These were coded to be distinguished during the analysis.

I used these data in a propensity score matching algorithm with the 'MatchIt' package in R. This method seeks pairs of states with the lowest dyadic difference in matched propensity scores from a specified regression model (Ho et al, 2011). In this case, I used a logit model with the earlier variables after imputing their missing values with the 'Mice' package, involving an estimation of missing variable observations based on values observed in similar units (van Buuren and Groothuis-Oudshoorn, 2011). I included binary indicators for each variable, which were coded 1 if an observation was missing that variable's data before imputation. This logit model had good fit, with a Hoslem test p-value of 0.695. As there are a variety of choices available for the method of matching with this package, I chose 'optimal' because of its ability to handle instances with few control cases for each treatment case (in this case, there was a ratio of about 1:4 respectively) (Ho et al, 2011).

Finally, I had to choose a ratio, or the number of matches per treatment state. This had a strict upper bound of 4. I did this by iteratively generating matches for all ratio values of 1:4, and

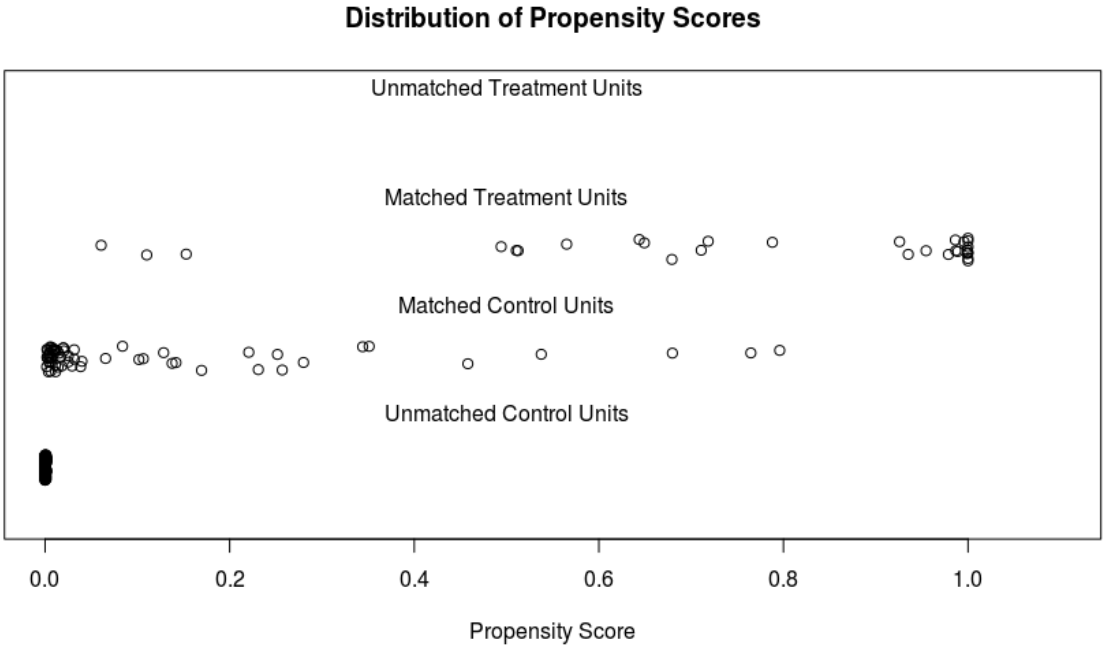
testing the statistical significance of the difference in the populations' propensity scores in the same model, the results of which are shown in table 2. Given the results, I chose to have 2 matches for each treatment state. This is because it is the highest value with an average matched propensity score above 0.3, and because of the significance of the difference between the two scores. Finally, this was chosen in part for both the convenience and reasonableness of the counterfactual population size. Figure 2 displays the distribution of propensity scores with the ratio of 2 across units.

Table 2: Case Matching Propensity Score Comparisons

Match Count	P-Value of Difference in Matched & Unmatched Propensity Scores	Average Propensity Score of Treated & Matched	Average Propensity Score of Unmatched	Ratio of Unmatched to Matched & Treated Means
0	> 0.000	0.656	0.066	0.101
1	> 0.000	0.496	0.002	0.004
2	> 0.000	0.333	> 0.000	0.001
3	> 0.000	0.250	> 0.000	0.001
4	> 0.000	0.200	> 0.000	> 0.000

The results yielded 90 countries, 30 of which received currency swap lines and 60 of which were similar in the dimensions stated by the Federal Reserve as relevant. These 60 matched countries serve as the counterfactual recipient states in this project, and are those which I will include in my models to test the stated hypotheses about social similarity.

Figure 2: Case Matching Propensity Score Distribution



B. Governors' Speeches

The choice of speech similarity is grounded in work by international political economists who focus on the relationships between central bankers, and between the Federal Reserve and other central banks specifically. Work on central bank communications has shown the significant consequences they have for financial markets (Ehrmann and Fratzscher, 2005; Hüning, 2016) and that strategies of central bankers' speeches have different outcomes in the development of policy both domestically and internationally (Ehrmann and Fratzscher, 2007; Amaya and Filbien, 2015). The semantic influence of central bankers' speeches on global markets demonstrates its unique power within international political economy, rendering it an intuitive potential explanatory variable.

Alongside the economic effects, linguistic anthropology has shown that similarity in speech constitutes a community among its members, in which social norms and mores are developed and respected (Gumperz and Levinson, 1996). As shown above, global policy regimes are both reflected and actualized through patterns of rhetorical similarity across central bankers and other relevant actors. Surprisingly, nearly all studies measuring central bankers' speeches and their similarity operationalize these values only as dependent variables, and rarely consider them as theoretically relevant predictors of social phenomena. This study does the opposite, using semantic similarity as an indicator of social similarity hypothesized to have influenced the currency swap selection process.

A necessary first step in measuring rhetorical similarity is the identification of the population of relevant speech-material. The Bank for International Settlements hosts a repository of foreign central bankers' speeches, which is publicly available on their website. After contacting the BIS about the criteria for publishing speeches, a representative responded with the following:

> "The central bankers' speeches can either be brought to the attention of the BIS by the different central banks, or collected by BIS staff from the central banks' websites. In the latter case, BIS staff use a tool which was developed in-house to scan the different central banks website. Unfortunately, the tool is not 100% reliable, so it is possible that some speeches are missed, but we do not have an estimate of the number of missing speeches.
>
> Also, the BIS only publishes speeches that are already made available by the central banks in English, which implies that (i) some speeches might not be published on the BIS website because they are not available in English, and (ii) any translation is provided by the central banks.

Furthermore, we apply some other criteria when selecting speeches. These are that:

- the subject of the speech is of interest to the international central banking community. For example, if it's a very domestically-oriented speech that would only mean something to citizens of one particular country, we would not take it;
- the speech has been given by a senior central banker;
- it has been given recently; ideally within the last two weeks." (Canelli, 2016)

While the missingness of some speeches can be seen as an inhibiting factor, the selection criteria of the BIS can be used as analytical leverage in this project in a few ways. First, the delimitation of subject importance in speeches is relevant to the kinds of speeches which the Federal Reserve would both review and deem consequential. The information acquisition resources of the Federal Reserve, while immense, are not infinite, and only substantively relevant speech material is likely to be relevant for their assessments of rhetorical similarity. Furthermore, the delimitation to English or English-translated speeches is also conducive to the social similarity dimension used in this paper, namely through the provision of an additional step in the data-generating process wherein central banks have the ability to more carefully and accurately emulate the rhetorical patterns of the FOMC.

In systematically measuring the semantic similarity of these speeches, I chose to use the 'textreuse' package in R for its flexibility and ability to handle large corpora. I chose two extremes of its many options for corpus similarity. One is a proportion of shared terms used in a corpus after it's been cleaned of common terms (Mullen, 2015). This serves as a blunt instrument of rhetorical similarity in a simple proportion of shared meaningful terms when central bankers give speeches. The other is the Smith-Waterman algorithm, which generates dyadic scores

between corpora (speeches) based on their sharing complex strings of terms (Mullen, 2015). This has been used to measure the degree of bill recycling across US state legislatures (Linder et al, 2016), and in this context serves to capture a more nuanced aspect of rhetorical similarity. These two measures capture very different aspects of speech similarity, and allow me to measure both the simple semantic similarity of any central bankers' speech to those of the FOMC, but also to test for instances of mimicry which could signal adherence to the US' financial regulatory regime.

For the simple similarity measure, I calculated the proportion of shared terms across all speeches for each country with the US, for each year between the earliest available and 2008. Importantly, this involved the inclusion of all speeches within a year, rather than the calculation of a score for each pair of speeches. This measure, bound between 0 and 100, reflects the simple similarity of vocabulary employed by central bankers in their descriptions of modern economic issues and their proposed resolutions. Specifically, it is the maximum similarity score between a state and the US in any of the five years preceding the crisis. Across the dataset of swap recipients and matched counterfactuals, the average score was 23.48 with a standard deviation of 26.81.

The Smith-Waterman algorithm required a more complex series of measurement decisions, especially because of the sensitivity of the output score to the parameters used to estimate it. Specifically, the algorithm identifies the optimal string match between documents based on the frequency of matching, mismatching, and missing terms between the two documents, which are weighted by scalar values provided by the researcher. In the absence of a methodologically or theoretically informed norm for this process (Linder et al, 2016), I opted to estimate scores for each speech dyad across a variety of parameters. Because the text processing

eliminates common English terms, I weigh the penalty imposed on gaps and mismatches in a given string equally, and thereby 'tune' the algorithm by changing the magnitude of the match reward relative to these, fixed at 1.

For each year in which there was speech data for a country, every possible pair of its speeches with those of the US in the same year were compared with this algorithm, cycling between match reward values of 1 and 5. These scores, after being averaged across all document dyads within each year, were transformed from their raw values to their proportion of the maximum possible score (which would be perfect speech identicality). The final measure used in the regression models reflects the maximum score proportion for all states in the five years preceding the crisis. Bound between 0 and 1, the mean value of this variable across observations was 0.002, with a standard deviation of 0.003.

C. Governors' Backgrounds

The importance of shared professional backgrounds among financial elites is a long-standing social scientific finding, and is especially central in literature on the revolving door and regulatory capture. Measured in a broad variety of ways, shared backgrounds of elites has been associated with collusion between elites, both within and between regulatory bodies, and between the public and private sectors (Seabrooke and Tsingou, 2009; Baker, 2010; Young, 2012; Selmier, 2013). Recent work has extended this logic to a relational framework with the logic of social network analysis, such as Young et al's findings on the relationship between firms' network distance to regulators and the frequency of their advocacy (2017). I apply this logic to central bankers' relationships to understand its role in swap line agreements. I argue that the similarity of professional and educational backgrounds of foreign central bank members to

those of the Federal Open Market Commission members is consequential for the likelihood of that individual's central bank to receive a swap line.

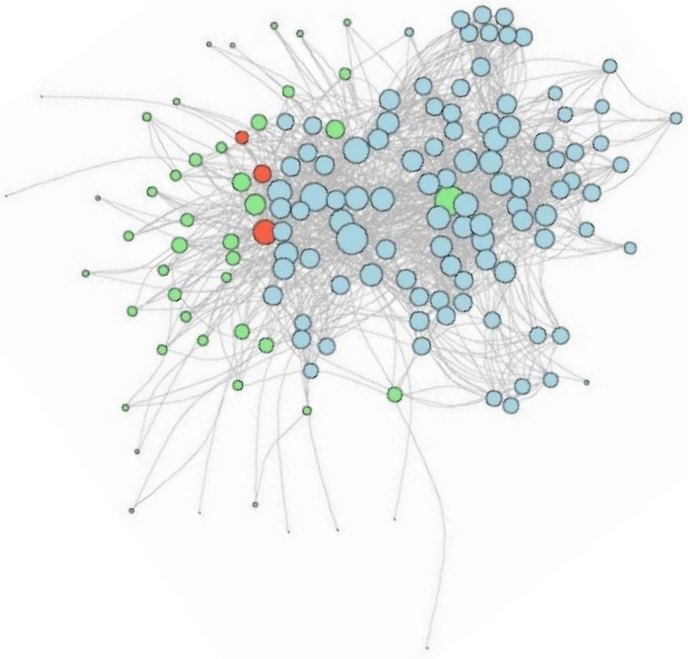
To measure this, I make use of the BoardEx dataset, which is an atlas of global employment history of individuals, including educational backgrounds and other professional activities. This dataset includes both public and private organizations, which includes central banks of various countries. The data include both the employment history of individuals, as well as the years in which that employment was active, allowing for the construction of a firm-to-firm social network, with weights proportional to the magnitude of shared employee-years. I follow the approach employed by Young, Marple and Heilman, whereby these data are used to construct a network of inter-firm connections (2017). This first involved the construction of a bimodal network of connections between individuals and organizations, which was subsequently 'collapsed' on individuals to constitute ties between organizations premised on their shared individuals. Figure 3 shows this network for all connections between organizations in the sub-network containing central banks for the 5 years preceding the crisis, with red nodes indicating collapsed Fed branches, green nodes indicating other central banks, and blue nodes indicating all other organizations.

This dataset has two important caveats worth acknowledging. First, there is clear regional bias of employment history focused strongly on Western states. Much like the missingness of speeches, this can be considered as an advantage. Western states conduct the overwhelming majority of financial business (Porter and Williams, 2016), meaning that one should expect the regional bias to be in part due to the uneven distribution of banking density. Furthermore, because the final regression models omit all states in the ECB and other regional central banks for their qualitatively different natures (Broz, 2015), their missing scores are moot. Finally, two

swap recipients were also missing from the dataset, adding an extra empirical hurdle to statistical support for this hypothesis with these data.

The second caveat is significantly more severe, but has an established solution. Big data are rife with errors, and BoardEx is no exception. There are many instances of artificially distinct firms in these data, such as the appearance of McDonald's, McDonald's Restaurants, and McDonald's Inc. While anyone could logically conclude that these are the same firm, computers do not have this common sense. This problem is not apparent in instances of central banks, but duplicity of actually singular firms could exaggerate the distance between one central bank and another in the broader network. To handle this, I apply the entity resolution algorithms outlined by Marple et al, which broadly manipulate the nature of connections between firms to reduce the instances of artificially distinctions (forthcoming). These techniques have demonstrable effects on the network, especially the topological measures involving distances between firms, which improve the reliability of any firm-to-firm distance calculation significantly (Marple et al, forthcoming).

Figure 3: Network of Central Bank Connections by Background



After applying these resolution techniques, I further replicated Young et al's approach through the log-transformation of edge weights, forcing the distance algorithm to choose paths with the largest number of shared employees, and simultaneously handling the power-law distribution of edge weights in a more linear fashion (2017). This allowed for a neater calculation of distances between any two organizations in the network, offering scores for all cases' central banks which were in the dataset, and a score of infinity for those banks which were not. Finally, I calculate proximity as a function of distance, specifically by subtracting the normalized distance scores from 1. To account for firms not included in the network, I again use Young et al's strategy, whereby their distance is considered to be the highest integer not included in the distribution of distances for observed firms (Young et al, 2017).

This yielded a score for all countries' central banks which ranged from 0 to 1, with 1 reserved solely for the Federal Reserve itself (perfect proximity) and 0 for central banks which were not in the dataset (maximal distance). The final score included in the regression models is the maximum proximity of each central bank to any of the Federal Reserve branches in the five years preceding the crisis, allowing only for the influence of fresh relationships which should not be expected to have deteriorated significantly by 2008 . The average proximity score in this distribution for all case states is 0.437, with a standard deviation of 0.379.

D. Institutional Framework

During their deliberations, the Federal Reserve alluded to the importance of central banks' pursuit of 'prudent policies' in deciding whether they should receive a line ("Minutes of the Federal Open Market Committee", 2008). While policy prudence is in part a factor of the individuals who make them, the agenda of feasible policies is set by the allowances of institutional arrangements among individual central banks. For example, work on institutional

design of central banks shows that the legal institutional arrangements of a bank affect anything from its stability and success (Barth et al, 2001) to its unique policies, like inflation targeting (Dittmar et al, 1999) and crisis management (Davies and Green, 2010). For this reason, we should expect policy maneuvering by foreign central bankers to be significantly affected by the context in which they work, and subsequently that the Federal Reserve would strongly weigh the variation on this dimension. This notion is corroborated by the independent insignificance of US bank exposure in Broz's regression models when central bank independence scores are included.

I measure institutional similarity using the World Bank banking regulation and supervision survey (Cihak et al, 2012). This survey includes a broad battery of questions on banking regulation within an economy, ranging from the rules governing entry into banking, to the enforcement quality of various banking regulations. One section is of particular importance for this study, namely the questions on the survey relating to supervision of the banking sector. This includes questions such as what kind of entity supervises banks, the count thereof, their responsiveness to the executive, legislature, and their liability for damages to banks incurred by regulation, among others. In total, 18 relevant binary indicators were chosen from the 41 possible responses in this section, either through the reduction of mutually exclusive responses or the omission of questions for which the US offered no response . The responses to these questions were recoded from text to binary indicators; 1 for yes, -1 for no, and 0 for a non-response. The survey includes 173 countries, and of the 90 treated and matched case states, 30 were not included in the survey and had 0 values for all questions.

These binary indicators had clearly identifiable subjects, each with a different number of responses. To account for the absolute correlations between these responses, which ranged from 0.00 to 0.84, they were reduced using factor analysis. Exploratory principal component analysis

revealed that 5 factors were both statistically sufficient (final principal component with SD > 1) and qualitatively logical, which was confirmed with the loadings for the 5-factor model (Tucker-Lewis factoring reliability = 0.813). Tables 3 and 4 below displays the factor correlation matrix and loadings.

Table 3: Factor Loading Correlation Matrix

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	1.00	-0.25	-0.11	-0.19	0.22
Factor 2	-0.25	1.00	0.08	0.19	-0.07
Factor 3	-0.11	0.08	1.00	-0.02	0.23
Factor 4	-0.19	0.19	-0.02	1.00	-0.15
Factor 5	0.22	-0.07	0.23	-0.15	1.00

Table 4: Factor Loadings

Binary Indicator	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Simple Majority Legislat. Appoints Head	1.006				
Simple Majority Legislat. Removes Head	0.810				
Supervisor Responsible to Legislature	0.460				
Adopted Basel Standards		0.597			
Mandatory Infraction Reporting		0.536			
Multiple Superintendents Supervising		-0.489			
Cabinet Removes Head		-0.567			
Super-Majority Legislat. Removes Head		-0.608			
Prime Minister Removes Head			0.904		
Prime Minister Appoints Head			0.880		
Mandatory Infraction Repercussions				0.569	
Head Has Power to Forgive Infractions				0.464	
Central Bank Supervises Banks				0.392	
Head Has Fixed Term				0.343	
Multiple Finance Supervisor				-0.465	
Single Finance Supervisor				-0.621	
Responsible for Good-Faith Mistakes					0.679
Responsible for Damages					0.618

The reduction of these questions to factors allowed for two final manipulations, both of which are included in the final regression model. The first is the most straight-forward use of factor scores, namely the creation of an index through simple summation of their values. After the summation of the factor scores, the final scores were normalized by the US' score on the factor index and subtracted from 1. In this way, they represent the relative variance of the factor index score for any country's central bank, including those which had no responses, from the responses of the Fed. Across all cases, the mean was 4.097 with a standard deviation of 2.126, ranging from 0 to 9.886.

The second manipulation makes use of cosine similarity, which involves calculating the angle between the multidimensional vectors constituted by these scores. This represents an importantly different understanding of these scores from the simple summation index, namely through the gradated measurement of parallel or orthogonal responses in the 5-dimensional space constituted by these scores. While the factor sum accounts solely for the varying weights of the responses to these questions as assigned by factor analysis, cosine similarity accounts for both the directionality and magnitude of these score vectors as they differ from the Fed's. This score is bound between -1 and 1, with 0 representing perfect identicality, and -1 and 1 representing different poles of perfect orthogonality. The mean score across all cases was -0.497, with a standard deviation of 0.339 .

CHAPTER 5

RESULTS

To test these hypotheses, I constructed a linear model predicting a currency swap from the Federal Reserve with a battery of variables relevant to each claim, and a final model including them all. The models presented in table 5 include only the significant variables after various exploratory models which demonstrated their robustness alongside such measures as capital account openness and GDP growth rate. These models are only run for non-ECB states which were not members of broader regional central banks, which were 48 of the 90 cases states. This reduction added a second level of filtering to establish an appropriate population of potential recipients, amongst whom this relationship is meant to be tested . The probit regression results offer support for the first and third hypotheses, and indirect support for the second. Table 5 displays the significance of each variable set, first by hypothesis and finally together with pseudo-R2 figures for comparison with Broz's model. Figure 4 shows marginal effects with 95% confidence intervals, also reported in the results.

A first note is that only one variable defies expectations. Term similarity holds a negative independent effect on the likelihood of swap receipt, despite contrary predictions. This measure is specifically the average proportion of total terms shared across all speeches in the five years preceding the crisis, ranging from 0 to 100 for interpretation. A separate regression shows that term similarity is positively associated with swap likelihood on its own, which suggests its negative direction is a result of its interaction with the Smith-Waterman scores. This has some logic to it; higher proportion of shared terms without an increase in the length of shared string content should represent misalignment on substantive policy areas with the US, thereby diminishing the likelihood of a swap. Outside of this variable, all others demonstrate a positive

relationship between social similarity to the Federal Reserve and the likelihood of receiving a currency swap.

The single strongest predictor of swap receipt is a foreign central bank's independence, using the CBI dataset (Garriga, 2016). This variable, measured as the proportional difference from the US' score in 2007, is robust to all other measures included for the various hypotheses and controls. This variable ranges from -0.4 to 0.4, meaning that the country with the highest CBI score had between 1.28 and 2.82 times greater likelihood of receiving a swap line from the US than the country with the lowest score. This offers important support for the notion that the US strongly preferred independent central banks to manage the currency swaps it was issuing. This inclination toward independent central banks is a strong first indicator of the Fed's preference for social similarity, comporting with its long history of operating largely independently of Congress. Despite the dearth of significance for either of the institutional factor measures, their negative direction alongside the positive effect of CBI scores can be interpreted as partial support for the second hypothesis .

The next strongest predictor of a currency swap during this period was the similarity of foreign central bankers' speeches. As discussed, the negative term similarity is understandable as an independent effect alongside the strong, positive effect of Smith-Waterman similarity. This finding is robust to the inclusion of a variety of other economic indicators, including GDP growth, and is largely independent of the BoardEx network proximity (correlation = 0.31). This variable's range is bound from 0 to 1 , so these results show that a 0.01% increase in similarity score with the US, as a proportion of the maximum possible score, is independently associated with a 1.18 to 2.45 times greater likelihood of receiving a swap line. This offers strong support

for the first hypothesis, and demonstrates nuance in the kinds of speech signaling rewarded by the Fed.

Finally, the proximity of foreign central bankers to members of the FOMC is strongly and positively associated with the likelihood of a currency swap. This variable is again bound between 0 and 1, with the score of 0 reserved for states not in the employment network, and the score of 1 only available to the Federal Reserve itself. By this logic, the central bank closest to the Fed in this network had between 1.04 and 1.91 times higher likelihood of receiving a currency swap line than the farthest bank in the network, independent of all other factors. Despite the relatively marginal substantive effects at the lower bound of this confidence interval, this finding is both robust to a host of other economic factors, and strongly supportive of the third hypothesis. These results suggest that well-connected central bankers were far better-equipped to solicit a currency swap during the crisis than central bankers who had little professional overlap with FOMC members.

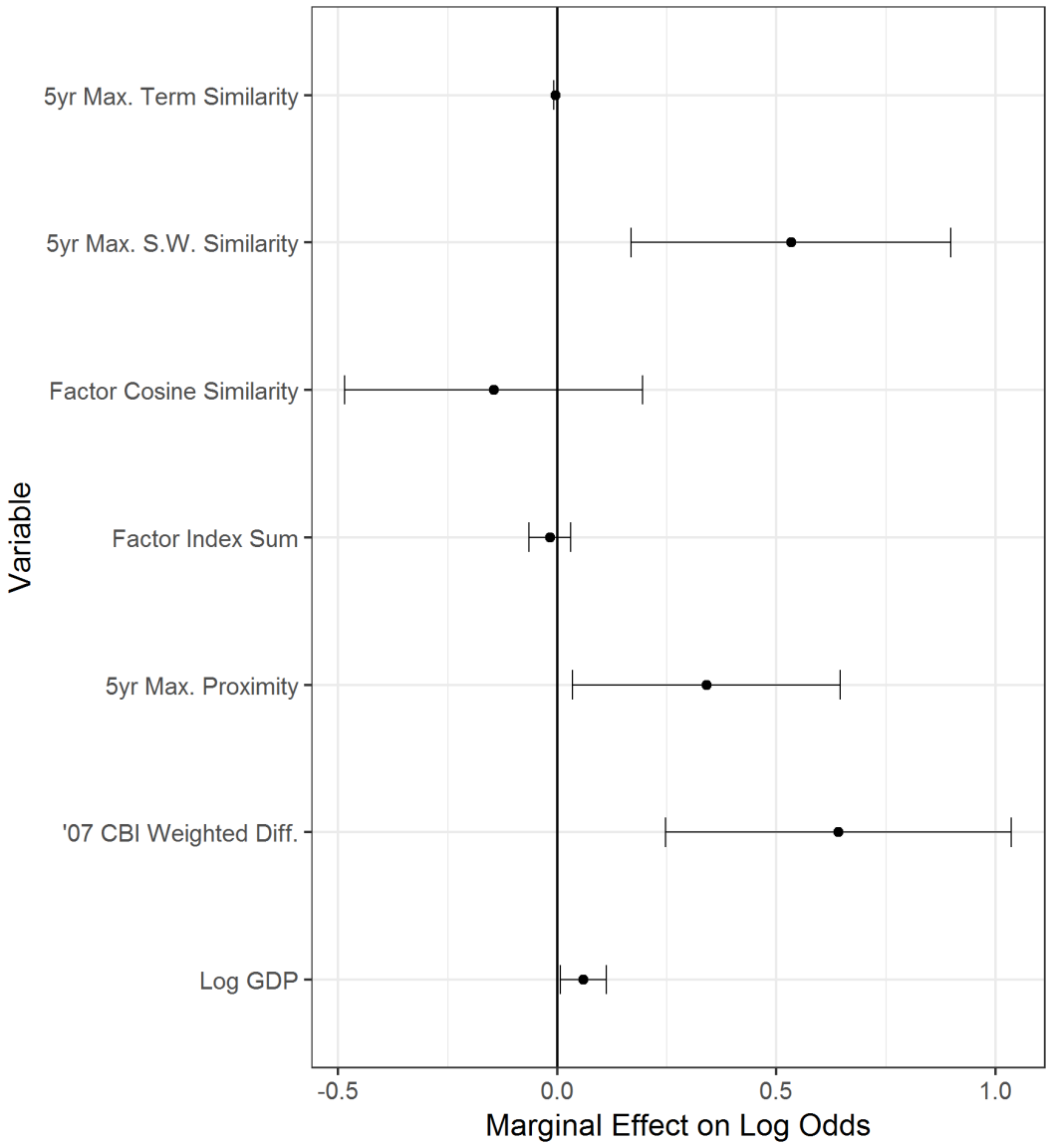
Collectively, these results demonstrate strong support for the broader theory articulated here, namely that dimensions of social similarity played a significant role in the selection of recipients for currency swaps during the 2008 crisis. These results show stronger promise than those relying solely on economic indicators, with pseudo-R2 values up to twice those of earlier predictive models. The final model includes a greater number of states with stronger theoretical justification for their inclusion, and its findings are robust to the inclusion of the primary explanatory variables of earlier studies . The model validates claims made by the FOMC that states with greater economic mass were more strongly considered, a corroboration of Broz's earlier findings. With every ten-fold increase in GDP, a country is estimated to be 1.006 and 1.119 times likelier to have received a currency swap from the Federal Reserve. Its continued

robustness across models is interesting when juxtaposed against its subordinate significance to that of speech similarity and CBI, lending further credence to the claim that social similarity played a comparable or stronger role in this decision process than economic indicators alone.

Table 5: Regression Results

	Dependent variable: Currency Swap			
	Speeches	*Institutional*	*Backgrounds*	*All*
5yr Max. Term Similarity	-0.003			-0.004*
	(0.002)			(0.002)
5yr Max. S.W. Similarity	0.503**			0.533***
	(0.188)			(0.186)
Factor Cosine Similarity		-0.078		-0.145
		(0.190)		(0.174)
Factor Index Sum		-0.019		-0.017
		(0.027)		(0.024)
5yr Max. Proximity			0.319*	0.340**
			(0.163)	(0.156)
'07 CBI Weighted Diff.	0.597***	0.590***	0.666***	0.642***
	(0.202)	(0.217)	(0.205)	(0.202)
Log GDP	0.100***	0.119***	0.082***	0.059**
	(0.020)	(0.019)	(0.027)	(0.027)
Constant	-2.332***	-2.717***	-1.998***	-1.485**
	(0.485)	(0.486)	(0.603)	(0.603)
Observations	48	48	48	48
Max. Likelihood Pseudo-R^2	0.653	0.600	0.628	0.695
Log Likelihood	-6.953	-10.359	-8.625	-3.842
Akaike Inf. Crit.	23.907	30.718	25.250	23.685
Note:				*p<0.1; **p<0.05; ***p<0.01

Figure 4: Marginal Effects on Log-Odds of Currency Swap Receipt



CHAPTER 6

DISCUSSION

These results offer strong support for the theory proposed here, that social similarity held a significant influence on the likelihood of a state to receive a swap. Among the states which would be reasonably considered for a swap, delimited through matching on explicit selection criteria and filtering qualitatively illogical cases, the similarity of speeches, professional backgrounds, and institutional factors all held significant effects on swap likelihood in the expected direction. While the measure constructed for institutional similarity held no significant effects, the coefficients were in the expected direction, and another measure of institutional similarity to the US proved to be the strongest indicator of swap receipt. Furthermore, these variables were robust to a host of traditional economic indicators such as GDP (net and growth rate), and US trade share and bank exposure, which have been used to explain this phenomenon. The regression models presented suggest that social similarity strongly affected a central bank's chances at receiving a currency swap during the financial crisis, and that it holds superior explanatory power to sheer economic indicators alone.

Another finding of interest is crucial for supporting an earlier claim made about this theory, namely that US bank exposure and trade may be simultaneous byproducts of the same influence as that affecting swap receipt. On top of the insignificance of US bank exposure and trade share alongside the measures for social similarity constructed here in predicting swap receipt, two basic OLS models show that both of these variables are strongly and positively associated with measures of social similarity. These results even vary logically, with professional backgrounds of central bankers exhibiting stronger influence on bank exposure, and speech similarity and CBI affecting trade more strongly. Taken together, these results offer

strong support for the claim that social similarity drives estimates of foreign institutions' trustworthiness, thereby simultaneously affecting both decisions such as trade and investment, as well as elite decisions like emergency currency swaps. Social similarity may come to be shown as a confound to a broader variety of international economic predictive models, and future work should take its role more seriously under such circumstances.

There are several political consequences of these findings. First, cognitive models of decision-making under uncertainty apply even to the loftiest political and economic elites, and theories which attempt to explain their behavior on the international stage should consider social psychological foundations more strongly. As a corollary, we should not expect this to be an isolated circumstance of socially homophilous tendencies, rather an expression of basic human tendencies, the amplitude of which is proportional to situational uncertainty. The selection of currency swap recipients offers a unique window into the decision-making by the Fed under circumstances which allow minimal time for the preparation of thorough dossiers which typically accompany the redistribution of billions of dollars. In lieu of more informed cost-benefit analyses, members of the FOMC appear to have relied on basic social heuristics in identifying qualified recipients, a factor of the uncertainty they faced. Absent an institutionalized mechanism to handle this, we should expect it with the next crisis.

Economically, these results appear to have graver consequences. If this behavior is indicative of broader trends in the distributive decisions of global financial policy elites, then a continued insulation of wealth from the global south should be expected. Even if this behavior is isolated to crises of the sort which occurred in 2008, this trend suggests that the distribution of much-needed resources during a global banking epidemic could spell the doom of nations who don't quite look like the hardly-diverse Federal Reserve (Klein, 2016). These tendencies impede

progress toward a more equitably distributive global economy, and therefore demand some institutionalized mitigation system to preclude unnecessary suffering which would result in those dissimilar states.

Such a mechanism would require some enforcement over the Federal Reserve, which is domestically unlikely but could be pursued through proposals in negotiations like the Basel Accords. An example of such a mechanism could resemble a phone tree for emergencies, organized hierarchically by connectedness of central banks via existing swap lines. Such a mechanism would make use of the relational nature of existing dyadic central bank support lines, which have flourished after the crisis (McDowell, 2016), to ensure the most efficient allocation of emergency currency for debt repayment during a global crisis. This follows the existing stated logic of the Fed in their avoidance of states with existing lines, but extends that framework to a system-level analysis of distances between states that both have and need resources of viable currency. Absent such a mechanism on the international stage, especially one to which multiple powerful central banks adhere, we should expect recurrences of these homophilous tendencies during highly uncertain and consequential distributive situations.

CHAPTER 7

CONCLUSION

Friends of the Fed managed to survive the 2008 financial crisis via their preferential receipt of much-needed currency swaps to pay dollar debt obligations. This paper has demonstrated that social similarity of central banks along the dimensions of speeches, professional backgrounds, and institutional contexts were all consequential for a state's likelihood of receiving such a swap. These theoretically informed predictors were built from relevant datasets of central bankers' speeches, professional and educational histories, and binary indicators of relevant central bank institutional characteristics. These variables have greater significance in predicting swap receipt likelihood than economic indicators from earlier models, such as bank exposure and trade share with the US, and have even been shown to predict those economic indicators as simultaneous byproducts.

This paper has opened the door to the rigorous quantification of social similarity in the context of predicting international political economic phenomena, such as swap line receipt during a crisis. Future work should address some of the inadequacies of the measures generated here, which were necessary consequences of an exploratory study like this. Specifically, future studies should disaggregate the nuance of textual signaling within speech in more detailed ways, such as the employment of relational text analysis to elucidate central banking ideologies (Rolfe et al, forthcoming). This approach would more closely access the aspect of speech similarity which this study showed to be consequential, namely the particular constellations of policy-relevant text, rather than simple frequencies of indicative terms or phrases. Furthermore, future work should improve upon the measures of institutional similarity generated here, especially in terms of validation against existing measures of institutional characteristics like CBI scores.

Finally, future work should test the applicability of this model to political economic decisions in different cultures and times, as well as under varying degrees of risk and uncertainty, to gauge its generalizability more broadly.

Social similarity is a consequential factor in economically distributive decisions made under great uncertainty. Cognitive foundations of these heuristics have been demonstrated in a battery of social psychological experiments and studies, and this paper demonstrates that financial policy elites are not above the human tendencies which these heuristics embody. Rather, it appears that members of the FOMC chose institutions which most resemble their own to receive billions of dollars in what were effectively international bailouts between central banks. The recognition of the truly social nature of even elite decisions has consequences both for how we manage our existing international economic order, especially during global crises like that of 2008, as well as for the construction of a more equitably distributive system as we deepen our mutual international interdependence.

APPENDIX I

BROZ REGRESSION MODEL WITH CENTRAL BANK INDEPENDENCE AND GLOBAL FINANCIAL CENTER

Broz Model Regression Results with and without CBI

	Dependent variable:	
	Currency Swap	
	Broz Model	*CBI & GFC*
US Bank Exposure	0.004*	0.002
	(0.002)	(0.002)
Share Global GDP	-0.736	-0.287
	(1.791)	(1.894)
Share Global Liquid Liabilities	1.749	0.923
	(2.880)	(4.084)
'07 Share US Trade	3.816	2.874
	(2.241)	(2.628)
Inflation	-0.004	-0.003
	(0.004)	(0.004)
Reserves IFS	-0.000	-0.000
	(0.000)	(0.000)
Dollar Shortage	0.003	0.002
	(0.002)	(0.002)
Global Financial Center		0.303
		(0.373)
'07 Weighted CBI		-0.457
		(0.392)
Constant	0.259**	0.549*
	(0.103)	(0.300)
Observations	33	32
Max. Likelihood Pseudo-R^2	0.263	0.349
Log Likelihood	-13.877	-12.053
Akaike Inf. Crit.	43.754	44.105
Note:	*p<0.1; **p<0.05; ***p<0.01	

APPENDIX II

CENTRAL BANK SURVEY QUESTIONS

a. What body/agency supervises banks?
    i. (a) The Central Bank
    ii. (b) A Single Bank Supervisory Agency/ Superintendency
    iii. (c) Multiple Bank Supervisory Agencies/Superintendencies
b. Is there a single financial supervisory agency for all of the main financial institutions (insurance companies, contractual savings institutions, savings banks)?
c. Is there a single financial supervisory agency for all of the activities in which commercial banks are allowed to do business?
d. To whom are the supervisory bodies responsible or accountable?
    i. (a) the Prime Minister
    ii. (b) the Finance Minister or other cabinet level official
    iii. (c) a legislative body, such as Parliament or Congress
    iv. (d) other
e. How is the head of the supervisory agency (and other directors) appointed?
    i. (a) the decision of the head of government (e.g. President, Prime Minister)
    ii. (b) the decision of the Finance Minister or other cabinet level authority
    iii. (c) a simple majority of a legislative body (Parliament or Congress)
    iv. d) a supermajority (e.g, 60%, 75%) of a legislative body
    v. (e) other
f. Can the head of the supervisory agency can be removed by:
    i. (a) the decision of the head of government (e.g. President, Prime Minister);
    ii. (b) the decision of the Finance Minister or other cabinet level authority;
    iii. (c) a simple majority of a legislative body (Parliament or Congress);
    iv. (d) a supermajority (e.g, 60%, 75%) of a legislative body;
    v. (e) other
g. Does the head of the supervisory agency (and other directors) have a fixed term?
h. Is your country planning on adopting Basel II?
i. If an infraction of any prudential regulation is found in the course of supervision, must it be reported?
j. Are there mandatory actions that the supervisor must take in these cases?
k. Can individual supervisory staff be held personally liable for damages to a bank caused by their actions or omissions committed in the good faith exercise of their duties?
l. Can the supervisory agency be held liable for damages to a bank caused by its actions?

APPENDIX III

REGRESSION MODEL INCLUDING US BANK EXPOSURE AND TRADE

	Dependent variable: Currency Swap
	Full Model & Exposure
US Bank Exposure	0.001
	(0.001)
US Trade Share	-0.138
	(1.998)
5yr Max. Term Similarity	-0.004*
	(0.002)
5yr Max. S.W. Similarity	0.490**
	(0.218)
Factor Cosine Similarity	-0.136
	(0.248)
Factor Index Sum	-0.024
	(0.031)
5yr Max. Log Weighted Proximity	0.463**
	(0.207)
'07 CBI Weighted Diff.	0.662**
	(0.279)
Log GDP	0.043
	(0.036)
Constant	-1.095
	(0.832)
Observations	35
Max. Likelihood Pseudo-R^2	0.815
Log Likelihood	-2.866
Akaike Inf. Crit.	25.731
Note:	*p<0.1; **p<0.05; ***p<0.01

APPENDIX IV

REGRESSION MODELS DEMONSTRATING SOCIAL SIMILARITY

EFFECT ON BANK EXPOSURE AND TRADE

	Dependent variables:	
	US Bank Exposure	US Trade Share '07
	(1)	(2)
5yr Max. Term Similarity	-0.012	-0.0002
	(0.303)	(0.0001)
5yr Max. S.W. Similarity	24.755	0.044***
	(27.579)	(0.014)
Factor Cosine Similarity	-5.856	-0.010
	(30.322)	(0.014)
Factor Index Sum	-2.369	-0.001
	(4.232)	(0.002)
5yr Max. Log Weighted Proximity	47.779**	0.020**
	(18.971)	(0.009)
'07 CBI Weighted Diff.	55.134	0.034**
	(33.078)	(0.015)
Constant	-12.083	-0.012
	(20.924)	(0.009)
Observations	55	59
R^2	0.202	0.318
Adjusted R^2	0.103	0.240
Residual Std. Error	46.535 (df = 48)	0.023 (df = 52)
F Statistic	2.031* (df = 6; 48)	4.049*** (df = 6; 52)
Note:		*p<0.1; **p<0.05; ***p<0.01

BIBLIOGRAPHY

"2008 Public Budget Database". Fiscal Year 2008 Public Budget Database. United States Office of Management and Budget. Receipts: Public Budget Database. Retrieved 14 March 2015.

Aizenman, Joshua, and Gurnain K. Pasricha. Selective Swap Arrangements and the Global Financial Crisis: Analysis and Interpretation. Cambridge, Mass: National Bureau of Economic Research, 2009. Internet resource.

Amaya, Diego, and Jean-Yves Filbien. "The Similarity of Ecb's Communication." Finance Research Letters. 13.1 (2015): 234-242. Print.

Baker, Andrew. 2010. "Restraining Regulatory Capture? Anglo America, Crisis Politics and Trajectories of Change in Global Financial Governance", International Affairs 86(3): 647-664.

Barth, James R, Gerard Caprio, and Ross Levine. "Banking Systems Around the Globe: Do Regulation and Ownership Affect Performance and Stability?" Prudential Supervision : What Works and What Doesn't / Edited by Frederic S. Mishkin. (2001). Print.

Broz, J.Lawrence. "The Politics of Rescuing the World's Financial System: the Federal Reserve As a Global Lender of Last Resort." The Korean Journal of International Studies. 13.2 (2015): 323. Print.

Canelli, Maria. "Re: Questions About Central Bank Speeches." Message to Timothy Marple. 8 August 2016. E-mail.

Cihak, Martin; Demirguc-Kunt, Asli; Peria, Maria Soledad Martinez; Mohseni-Cheraghlou, Amin. 2012. Bank regulation and supervision around the world : a crisis update. Policy Research working paper ; no. WPS 6286. Washington, DC: World Bank. http://documents.worldbank.org/curated/en/279091468168248726/Bank-regulation-and-supervision-around-the-world-a-crisis-update

Davies, H, and David Green. Banking on the Future: The Fall and Rise of Central Banking. Princeton, N.J: Princeton University Press, 2010. Print.

Dittmar, Robert, William T. Gavin, and Finn E. Kydland. Price-level Uncertainty and Inflation Targeting. Ann Arbor, Mich: Inter-university Consortium for Political and Social Research [distributor, 1999. Internet resource.

Drezner, Daniel W. "The System Worked: Global Economic Governance during the Great Recession." World Politics 66.01 (2013): 123-64. Web.

Dunning, David, and Geoffrey L. Cohen. "Egocentric definitions of traits and abilities in social judgment." Journal of Personality and Social Psychology 63.3 (1992): 341.

Dunning, David, and Andrew F. Hayes. "Evidence for egocentric comparison in social judgment." Journal of personality and social psychology 71.2 (1996): 213.

Ehrmann, Michael, and Marcel Fratzscher. The Timing of Central Bank Communication. Frankfurt am Main: European Central Bank, 2005. Internet resource.

Ehrmann, Michael, and Marcel Fratzsche. "Communication by Central Bank Committee Members: Different Strategies, Same Effectiveness?" Journal of Money, Credit and Banking. 39 (2007): 509-541. Print.

"Enforcement Actions." FRB: 2016 Enforcement Actions. N.p., n.d. Web. 30 Nov. 2016.

Engelen, Ewald, et al. "Misrule of experts? The financial crisis as elite debacle." Economy and Society 41.3 (2012): 360-382.

Garriga, Ana Carolina. 2016. Central Bank Independence in the World: A New Dataset. International Interactions 42 (5):849-868 doi: 10.1080/03050629.2016.1188813

Grant, W. 1993. Business and Politics in Britain (London: Macmillan)

Gumperz, John J, and Stephen C. Levinson. Rethinking Linguistic Relativity. Cambridge: Cambridge University Press, 1996. Print.

Ho, D.E, K Imai, G King, and E.A Stuart. "Matchit: Nonparametric Preprocessing for Parametric Causal Inference." Journal of Statistical Software. 42.8 (2011): 1-28. Print.

Hüning, Hendrik. Asset market response to monetary policy news from SNB press releases. No. 177. HWWI Research Paper, 2016.

Johnson, Simon, and Kwak, James. 2010. 13 Bankers. New York: Pantheon Books.

Johnson, Simon. 2009. "The Quiet Coup", Atlantic, May.

Klein, Aaron. "The Fed's Striking Lack of Diversity and Why It Matters | Brookings Institution." Brookings. Brookings, 02 Aug. 2016. Web. 24 Mar. 2017.

Krueger, Joachim, and Russell W. Clement. "The truly false consensus effect: an ineradicable and egocentric bias in social perception." Journal of personality and social psychology 67.4 (1994): 596.

Linder, Fridolin, et al. "Text as Policy: Measuring Policy Similarity Through Bill Text Reuse." (2016).

McDowell, D. "The Us As 'sovereign International Last-Resort Lender': the Fed's Currency Swap Programme During the Great Panic of 2007-09." New Political Economy. 17.2 (2012): 157-178. Print.

"Minutes of the Federal Open Market Committee October 28-29, 2008." FOMC: Transcripts and Other Historical Materials, 2008. Board of Governors of the US Federal Reserve System, 29 Oct. 2008. Web.

Mullen, Lincoln (2015). textreuse: Detect Text Reuse and Document Similarity. R package

Porter, Tony, and Russell Williams. States, markets and regimes in global finance. Springer, 2016.

Ross, Michael, and Fiore Sicoly. "Egocentric biases in availability and attribution." Journal of personality and social psychology 37.3 (1979): 322-336.

Seabrooke, Leonard and Tsingou, Eleni. 2009. “Power Elites and Everyday Politics in International Financial Reform”, International Political Sociology, Vol. 3, Issue 4, pp. 457-461.

Selmier, W. Travis. 2013. “Stand by Me: Friends, Relationship Banking, and Financial Governance in Asia”, Business Horizons 56: 733-741

Tett, Gillian. Fool's Gold: How the Bold Dream of a Small Tribe at J.p. Morgan Was Corrupted by Wall Street Greed and Unleashed a Catastrophe. New York: Free Press, 2009. Print.

Tsingou, Eleni. 2008. “Transnational Private Governance and the Basel Process: Banking Regulation and Supervision, Private Interests and Basel II”, in Noelke, Andreas and Graz, Jean-Christophe (Eds), Transnational Private Governance and Its Limits (London: Routledge and ECPR), pp. 58-68.

Tsingou, Eleni. 2014. “The Club Rules in Global Financial Governance”, The Political Quarterly, 85(4): 417-419.

Tversky, Amos, and Daniel Kahneman. "Judgment under uncertainty: Heuristics and biases." Utility, probability, and human decision making. Springer Netherlands, 1975. 141-162.

van Buuren, Stef, and Karin Groothuis-Oudshoorn (2011). mice: Multivariate Imputation by Chained Equations in R. Journal of Statistical Software, 45(3), 1-67.

Young, Kevin. 2012. “Transnational Regulatory Capture? An Empirical Examination of Transnational Lobbying of the Basel Committee on Banking Supervision”, Review of International Political Economy, Vol. 19, No. 4, pp. 663-688.

Young, Kevin and Pagliari, Stefano. 2015. “Capital United? Business Unity in Regulatory Politics and the Special Place of Finance”, Regulation and Governance, forthcoming doi: 10.1111/rego.12098

Young, Kevin, Tim Marple, and James Heilman. “Between Jobs: Advocacy Behavior and Social Distance to Financial Regulators.” Forthcoming.